ADOPTION OF CIRCULAR ECONOMY FOR A SUSTAINABLE SOLID WASTE MANAGEMENT SYSTEM IN MALAYSIA

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ABSTRACT

Purpose - Solid waste management is inextricably linked to population, urbanization and economic development (Manaf, Samah & Zukki, 2009). Urbanization improves the economic wealth and disposable income which leads to the increase in the consumption of goods and services and correspondingly increase the amount of solid waste being generated. According to Periathamby, Hamid and Khidzir (2009), the generation of solid waste in Malaysia has increased for more than 91% over the past 10 years at an annual growth rate of 5.2% with only 21% being recycled and the remaining waste end up at disposal sites. At a cost of RM2.9 billion spent in 2016 with the exponential increase in cost at an average rate of 26% per annum, this phenomenon indicates that the current practice is not sustainable (PEMANDU, 2015). Therefore, this study proposes to adopt the concept of a Circular Economy which is based on a closed loop system that promotes the application of 3Rs (Reduce, Re-use and Recycle) principle to minimize the waste at source and maximizing the resource yields by circulating the materials in use as efficiently as possible. The concept brings new growth and job opportunities and it has developed from the recognition that a Linear Economy is unsustainable (ISWA, 2015). Hence, this paper gives an insight into possibility of embracing the concept of Circular Economy and further establishes a proposed framework and enablers to suit Malaysian's needs towards developing a cost-effective and sustainable solid waste management in the country. The scope of the study will cover the municipal solid waste and other similar waste from industrial, commercial and institutional.

Methodology - This study will be based on the quantitative research. A baseline data will include solid waste compositions, characteristics and the current recycling practices. The data sampling will be collected and divided according to (1) geographical distribution; (2) regional distribution; (3) size variation; (4) socio-economic; (5) sectorial diversity; and (6) rural and urban areas. The analysis on the waste will be carried out using the sampling technique as per draft Malaysian Standard 10Z011R0 (2011). All other data will be collected from the scientific literatures, existing data bases, observations on the phenomenon, and structured interviews with relevant policy makers, and set of questionnaires applied to stakeholders. Descriptive and inferential statistic methods were used to draw conclusions. The outcomes of the study are a comprehensive list of information on key enablers, initiatives and indicators that are relevant to the Circular Economy.

Findings - This study will prove that waste is a valuable resource and the government should reap the potential economic benefit from the valuable materials in waste estimated at RM1.63 billion per year derived from the 22% of recyclables items. This amount would alleviate the government financial burden (56%) and make the solid waste management is self-sufficient in the long run. The successful implementation of the Circular Economy will harmonize the environment, economy and society, and aspire to divert 40% of waste from landfill and to achieve 22% recycling rate by 2020 (PEMANDU, 2015). Findings from the study endeavor to provide guidelines for Malaysia to realize a successful transformation towards a Circular Economy that will maximize the economic return from waste, reduce the cost, protect the environment and improve the quality of life for the people. This will pave the way for a more realistic roadmap towards sustainability.

Keywords: Solid waste management, circular economy, 3Rs principle, sustainable development.

CONCLUSIONS

Circular Economy embraces the economic strategy to promote the sustainable development of economy and society, and to achieve sustainable environmental protection. The application of the concept has been proven by many developed countries and it is time for Malaysia to adopt the concept to fast track the transformation towards developing a cost-effective and sustainable solid waste management system in the country. To do so, the Circular Economy must be treated as a National Policy that will be strongly upholds by every levels in the government and societies.

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